

# HCRTP-mini

## Reflowable Thermal Protectors



### Description

High Current Reflowable Thermal Protection Mini (HCRTP-MINI) Device is a low-resistance, robust surface mountable thermal protector. It has a set open temperature and can be installed using reliable, lead-free, Surface Mount Device (SMD) assembly and reflow processes.

The new HCRTP-MINI device, recently added to the RTP family, can help withstand the demanding environmental, life and reliability requirements of automotive and industrial applications, including shock, vibration, temperature cycling and humidity exposures. In the field, the HCRTP-MINI device opens if its internal junction exceeds the device's specified open temperature. Temperature increases can have multiple sources, one of which is component failure (e.g., when using power components such as a powerFET, capacitor, resistor, triac, etc.) The HCRTP-MINI device open temperature is selected so that the device does not open within normal component operating windows, but it does open in a thermal runaway event and before the melt temperature of typical lead-free solders.

### Applications

- Automotive HVAC, ABS, power steering, DC/DC converters, diesel heaters, engine cooling fans, body control modules, PTC heaters, etc.
- IT servers, telecom power converters, etc.
- Other industrial applications with high demanding environmental, life and reliability requirements
- Other DC thermal protection

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### Features & Benefits

- Capable of high hold current
- Low profile, compact footprint
- Low series resistance; DC interrupt voltage capable
- Compatible with SMD solder reflow process up to 260°C
- AEC-Q200 qualified
- Helps prevent failed components from causing damage in case of a thermal event
- Allows the use of standard surface-mount production methods so that no special assembly costs are required
- Low power dissipation and voltage drop
- Supports DC electronic circuits
- Enables green design

### Additional Information



Resources



Samples

### Specifications

<b>Voltage Rating:</b>	500A @ 16 VDC
<b>Interrupting Rating:</b>	16 VDC
<b>Operating Temperature Range:</b>	-55°C to + 150°C
<b>Initial Resistance:</b>	50μΩ Min, 85μΩ Max

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## Reflowable Thermal Protectors

### Ordering Information

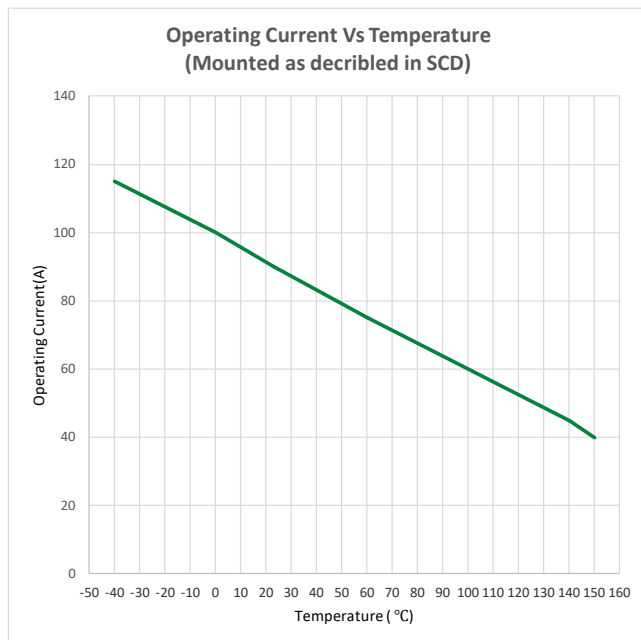
Part Number	Part Description	Package Size
RF4515-000	HCRTP-MINI	4000

### Referenced Performance

Results obtained on 44.4mm x 57.2 mm x1.6mm of 2-sided FR4 board T4485 with 4.0 oz. Copper Trace. HCRTP-mini device surface-mounted on test board T4485 using solder paste SAC 305 with recommended pad layout and solder stencil opening and thickness. Post reflow resistance based on SMT 1x reflow as outlined in solder reflow recommendation. Results are highly installation-dependent. Users should confirm for their own application.

Performance		Min	Typ.	Max	Units
<b>Post Reflow Resistance*</b>	@ 23+/-3°C	50	100	150	μΩ
	@ 150+/-3°C	110	155	200	
<b>Hold Current</b>	@ 23+/-3°C			90	A
	@ 140+/-3°C			45	
<b>Max Interrupt Current</b>	16 VDC			500	A
<b>Open Temperature</b>	Zero Bias	212	220	228	°C

\*Post reflow Resistance should be measured by a 4 wired method



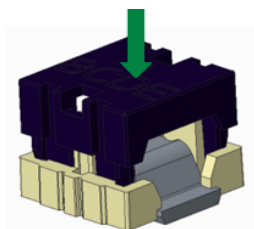
\* Halogen Free refers to: Br≤900ppm, Cl≤900ppm, Br+C≤1500ppm.

# HCRTP-mini

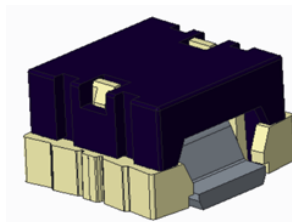
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### Arming method

Arming is to occur after surface mount installation. **Method:** Cap depressed manually or by mechanical plunger.



Downward force required for mechanical arming



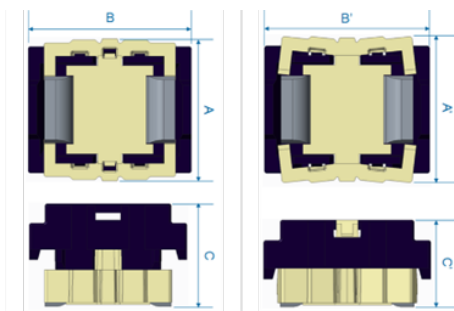
Device after mechanical arming completed

**Warning:** The device will not function without proper arming. If the device will be depressed by mechanical plunger, the plunger speed should be verified in the user's process.

Description	Min.	Typ.	Max.	Units
Arming Force (Normal to PCB surface)	25	32.5	40	N
Distance of travel	0.94	1.00	1.06	mm

### Dimensions

Dimensions in mm.



#### Before Mechanical Arming

	A		B		C	
	Min	Max	Min	Max	Min	Max
mm	6.14	7.14	5.56	6.56	4.80	5.20
in	0.242	0.281	0.219	0.258	0.189	0.205

#### After Mechanical Arming

	A'		B'		C'	
	Min	Max	Min	Max	Min	Max
mm	6.83	7.83	6.15	7.15	3.80	4.20
in	0.269	0.308	0.242	0.281	0.150	0.165

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